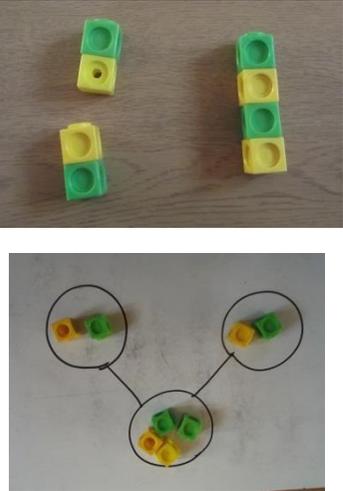
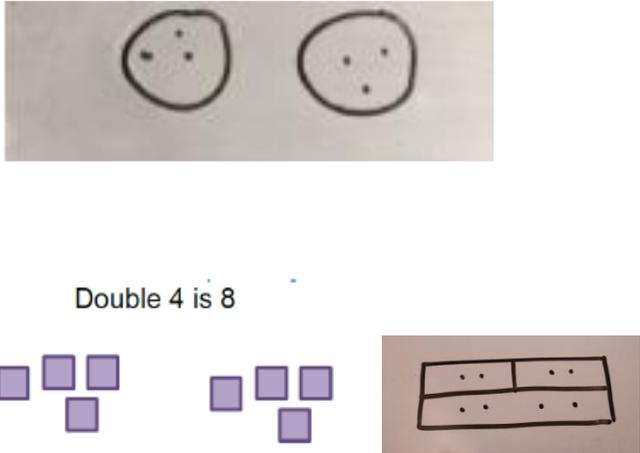
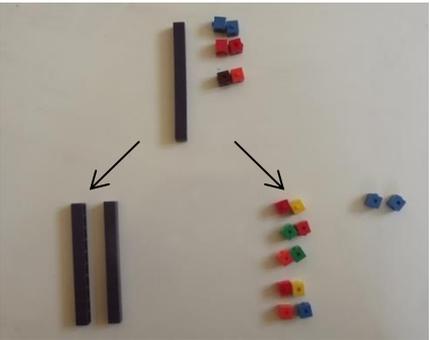
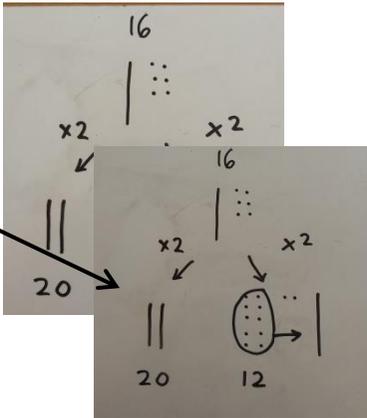
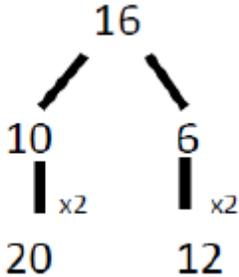
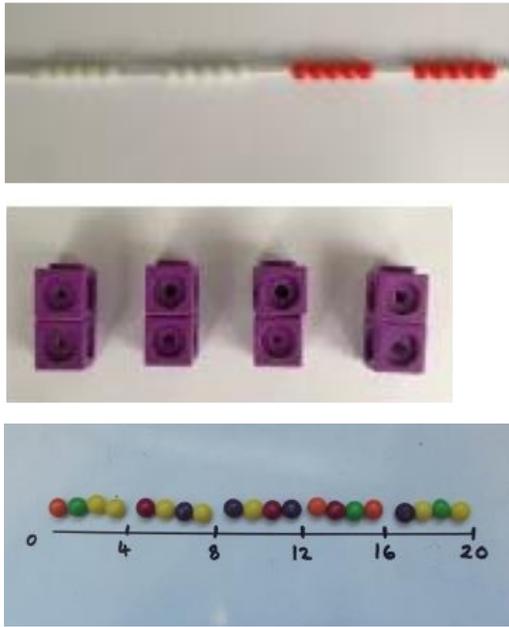


St Michael's Progression document using 'Concrete Pictorial & Abstract'

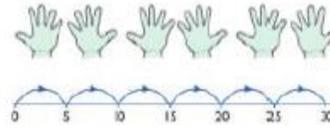
MULTIPLICATION – using the language 'lots of/groups of' not times!

STRATEGY	CONCRETE	PICTORIAL	ABSTRACT <i>Use the equals sign both ways</i>
<p>DOUBLING Halving Groups of - first steps</p>	<p>Use practical activities to show how to double a number</p> 	<p>Draw pictures to show how to double a number.</p> 	<p>$2 + 2 = 4$ $4 = 2 + 2$</p> <p>$2 \times 2 = 4$ $4 = 2 \times 2$</p> <p>Double 9 is... 14 is double...</p> <p>$7 + \square = 14$ $18 = 9 + \square$ (link with division Half of 14 is... Half of 18 is...)</p>
<p>Doubling 2 digit numbers using partitioning.</p>			<p>Partition a number and double each part before recombining</p> 

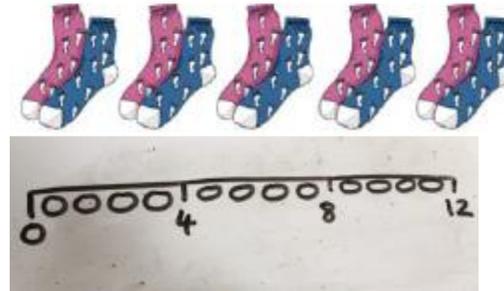
Counting in multiples



Varied Fluency: being able to represent pictorially in different forms.

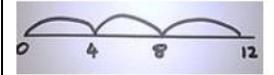


Use a number line or pictures to continue support in counting in multiples.



Count/ chant in multiples of a number aloud (use counting stick/ ruler)

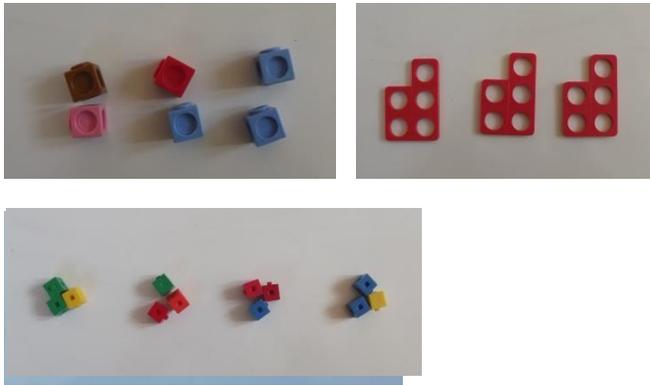
Write sequences of multiples of numbers.



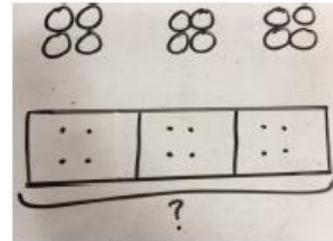
Sing times tables songs – on T drive and in Phase 1 individual year group folders.

Repeated addition

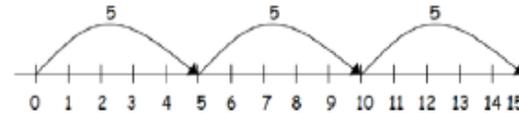
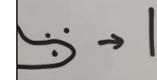
Use different objects to add equal groups.



Varied Fluency: being able to represent pictorially in different forms.



Show grouping to exchange.



Write addition sentences describing pictures / models

$$3 + 3 + 3 = 9$$

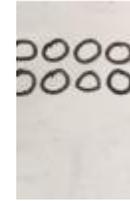
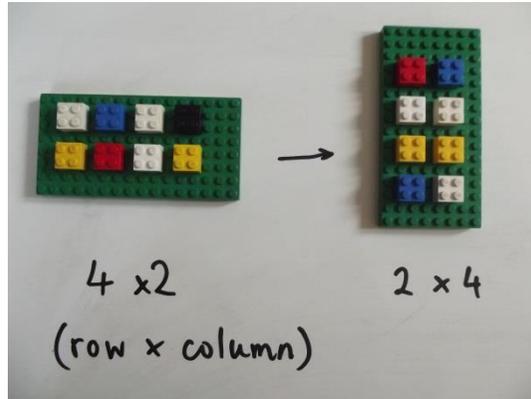
$$3 + 3 + 3 + 3 = 12$$

$$12 = 3 + 3 + 3 + 3$$

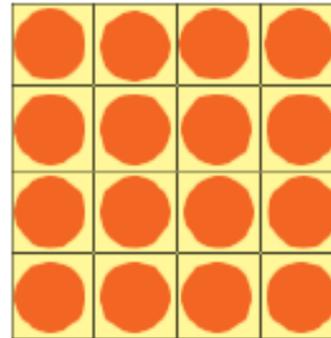
Arrays showing commutative multiplication



Arrays with counters /cubes etc annotated eg
 4×2
 2×4



Draw arrays in different rotations to find commutative multiplication sequence.



Link arrays to area of rectangles and squares.

Show link with square numbers.

Use an array to write multiplication sentences and reinforce repeated addition.

$$2 \times 5 = 10$$

$$5 \times 2 = 10$$

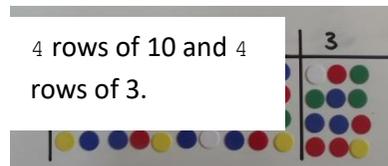
$$10 = 5 + 5$$

$$10 = 2 + 2 + 2 + 2 + 2$$

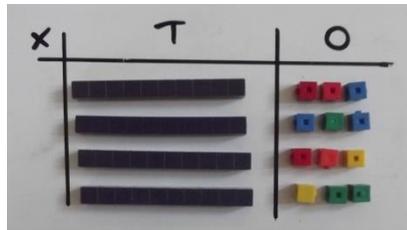
Repeated addition
See Spring white rose Y3

TO x O

Show the link with arrays to first introduce grid method counters/ base 10 equipment/counters



Then move onto using Base 10 equipment to move towards a more compact method.

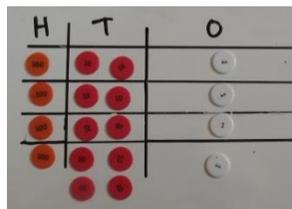
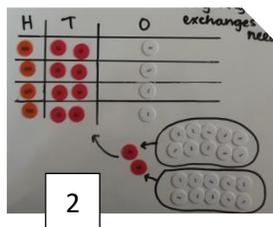


Use place value counters to show how we are calculating groups of numbers. We are multiplying by 4 so will need 4 rows.

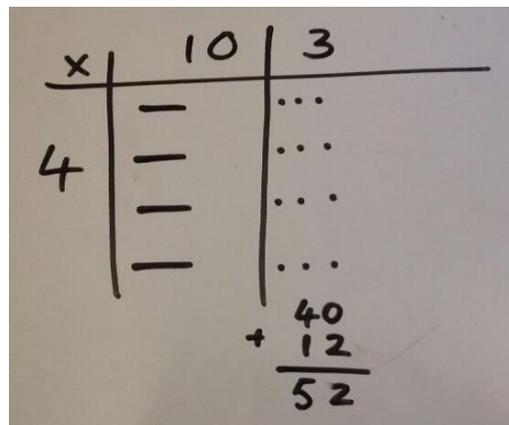
$$4 \times 126$$

Fill each row with 126.

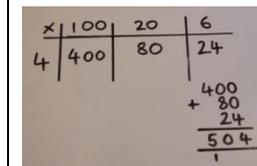
Add up the totals, starting with the ones and making any exchanges needed.



Children can draw Base 10 to show their thinking.



Start by multiplying by one digit numbers using compact method.



1

$4 \times 126 = 504$

3

4

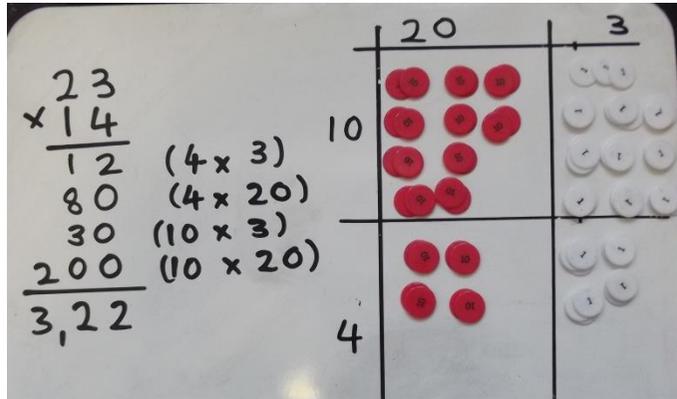
4

4

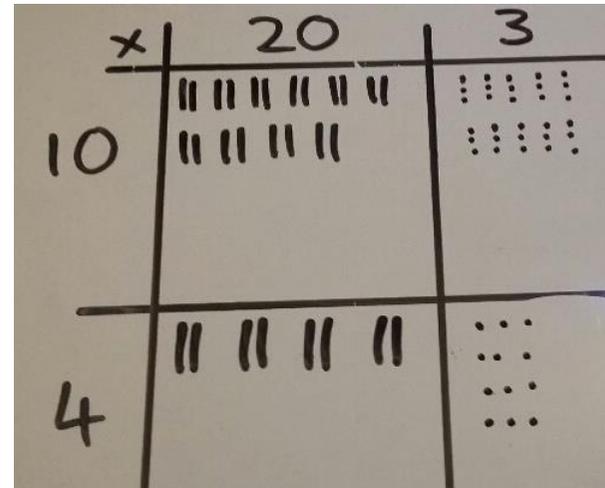
504

Grid method
TO x TO

ThHTO x TO.



Use decimal Place Value counters with the same models for grid and column multiplication.

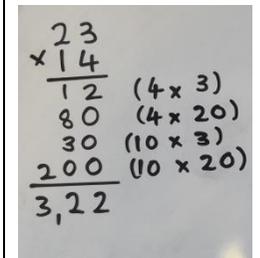


Moving forward, develop this for 2 digit x 2 digit, showing the different rows for grid method.

	10	8
10	100	80
3	30	24

X	1000	300	40	2
10	10000	3000	400	20
8	8000	2400	320	16

Expanded notation to support column multiplication.



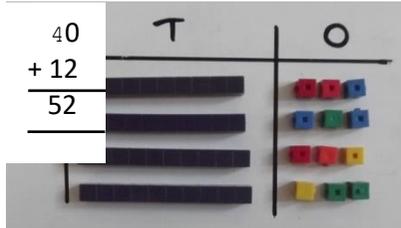
	20	3
10	##### ####	???? ????
4	####	???

200
30
12
+ 80

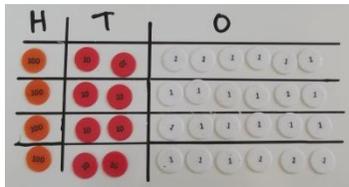
322
1

Column multiplication

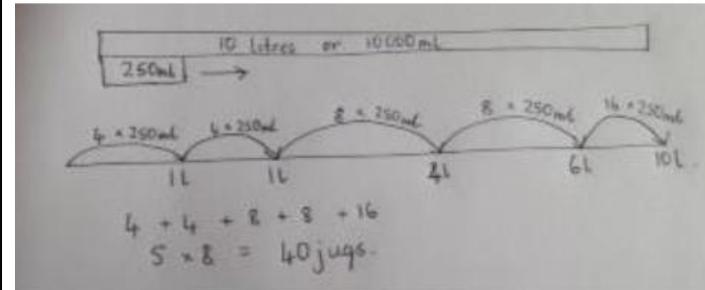
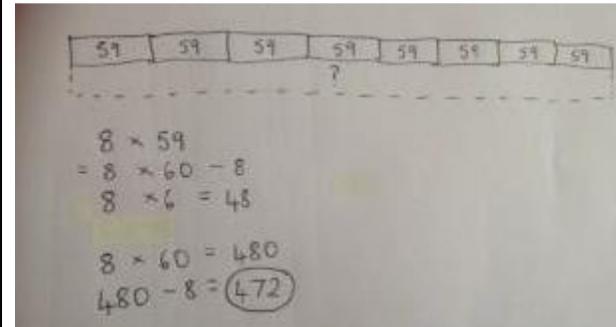
Children can continue to be supported by concrete apparatus with column multiplication. It is important that they always multiply by the ones first and note down the answer, followed by the tens which they note below.



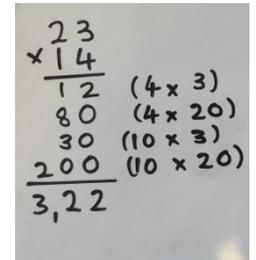
$$40 + 12$$



Bar models and number lines can also support learners alongside formal written methods when solving problems involving multiplication.



Remind children to set out their work in columns.



Expanded notation is replaced by compact.

